Assignment – 16

Multi-Dimensional Array in C Language

1. Write a program to calculate the sum of two matrices each of order 3x3 ?

#include<stdio.h>

int main(){

int a[3][3];

int b[3][3];

int c[3][3];

int i,j;

printf("enter the element of matrix 1");

for( int i=0; i<=2; i++){

for( int j=0; j<=2; j++){

scanf("%d\n",&a[i][j]);

}

}

printf("enter the element of matrix 2");

for( int i=0; i<=2; i++){

for( int j=0; j<=2; j++){

scanf("%d\n",&b[i][j]);

}

}

for( int i=0; i<=2; i++){

for( int j=0; j<=2; j++){

c[i][j]=a[i][j]+b[i][j];

}

}

for( int i=0; i<=2; i++){

printf(" some %d\n",c[i][j]);

}

return 0;

}

Output-

2. Write a program to calculate the product of two matrices each of order 3x3 ?

Solve –

#include<stdio.h>

int main()

{

int matrix1[3][3], matrix2[3][3], sumOfMatrix[3][3];

printf("Enter first 3\*3 matrix : ");

for(int i = 0; i < 3; i++)

{

for(int j = 0; j < 3; j++)

{

scanf("%d ", &matrix1[i][j]);

}

}

printf("\nEnter second 3\*3 matrix: ");

for(int i = 0; i < 3; i++)

{

for(int j = 0; j < 3; j++)

{

scanf("%d ", &matrix2[i][j]);

}

}

printf("\n Sum of both matrix is :");

for(int i = 0; i < 3; i++)

{

for(int j = 0; j < 3; j++)

{

productOfMatrix[i][j] = matrix1[i][j] + matrix2[i][j];

printf("%d ", productOfMatrix[i][j]);

}

printf("\n");

}

return 0;

}

Output-

1 1 1

1 1 1

1 1 1

2. Write a program to calculate the product of two matrices each of order 3x3 ?

Solve –

#include<stdio.h>

int main(){

int i,j,k,sum=0;

int a[3][3]={1,2,3,4,5,6,7,8,9};

int b[3][3]={1,2,3,4,5,6,7,8,9};

int c[3][3];

for( int i=0; i<=2; i++){

for( int j=0; j<=2; j++){

for( k=0; k<=2; k++){

sum =sum + a[i][k]+b[k][j];

c[i][j]= sum;

sum=0;

}

}

}

for( int i=0;i<=2;i++){

for( j=0; j<=2; j++){

printf(" %d ",c[i][j]);

}

printf("\n");

}

return 0;

}

Output-

10 11 12

13 14 15

16 17 18

Write a program in C to find the transpose of a given matrix ?

Solve –

#include<stdio.h>

int main(){

int a[3][3]={1,2,3,4,5,6,7,8,9};

int b[3][3];

for( int i=0; i<=2; i++){

for( int j=0; j<=2; j++){

b[i][j]=a[j][i];

printf(" %d",b [i][j]);

}

printf(" \n");

}

return 0;

}

Output –

1 4 7

2 5 8

3 6 9

4. Write a program in C to find the sum of right diagonals of a matrix ?

Solve –

#include<stdio.h>

int main(){

int a[3][3]= { 1,1,1,1,1,1,1,1,1};

int i,j,sum=0;

for( int i=0; i<3; i++){

for(int j=0; j<3; j++){

if(i==j)

sum= sum + a[i][j];

}

}

printf("%d\n",sum);

return 0;

}

Output-

3

5. Write a program in C to find the sum of left diagonals of a matrix ?

#include<stdio.h>

int main(){

int a[3][3]= { 2,2,2,2,2,2,2,2,2};

int i,j,sum=0;

for( int i=0; i<3; i++){

for(int j=2; j>=0 ; j--){

if(i==j)

sum= sum + a[i][j];

}

}

printf("%d\n",sum);

return 0;

}

Output-

15

6. Write a program in C to find the sum of rows and columns of a Matrix ?

#include<stdio.h>

int main(){

int a[3][3]= {2,2,2,2,2,2,2,2,2};

int sum=0;

for( int i=0; i<3; i++){

for( int j=0; j<3; j++){

sum = sum + a[i][j];

}

printf(" some of row %d\n",sum);

sum=0;

}

for( int i=0; i<3; i++){

for( int j=0; j<3; j++){

sum = sum + a[j][i];

}

printf(" some of colum %d\n",sum);

sum=0;

}

return 0;

}

Output –

some of row 6

some of row 6

some of row 6

some of colum 6

some of colum 6

some of colum 6

7. Write a program in C to print or display the lower triangular of a given matrix ?

Solve -

#include<stdio.h>

int main(){

int a[3][3]= {2,2,2,2,2,2,2,2,2};

int i,j;

for( int i=0; i<3; i++){

for( int j=0; j<3; j++){

if(i>j)

a[i][j]=0;

}

}

for( int i=0; i<3; i++){

for( int j=0; j<3; j++){

printf(" %d ",a[i][j]);

}

printf(" \n");

}

return 0;

}

Output

2 2 2

0 2 2

0 0 2

8. Write a program in C to print or display an upper triangular matrix ?  
solve -

#include<stdio.h>

int main(){

int a[3][3]= {2,2,2,2,2,2,2,2,2};

int i,j;

for( int i=0; i<3; i++){

for( int j=0; j<3; j++){

if(i<j)

a[i][j]=0;

}

}

for( int i=0; i<3; i++){

for( int j=0; j<3; j++){

printf(" %d ",a[i][j]);

}

printf(" \n");

}

return 0;

}

Output-

2 0 0

2 2 0

2 2 2